Easy and fast Enrichment of the Aroma Components of Cheese by MMSE

What is MMSE?

Monolithic Material Sorption Extraction (MMSE) is a novel approach for sample adsorption and extraction using monolithic hybrid adsorbent - MonoTrap.MMSE has advantages such as effective pretreatment with simple operation and high-efficiency adsorption capacity. In addition, importantly, MMSE does not require conditioning before use.

What is MonoTrap?

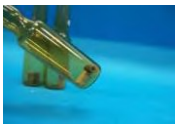
MonoTrap is a state-of-the-art silica monolithic and hybrid adsorbent having a large surface area and properties based on silica, activated carbon (graphite carbon for MonoTrap TD) and Octadecyl functional group.

Sample Preparation Procedure by MMSE-TD

Sample

No Conditioning Needed!!!
Blue cheese and Parmesan cheese; Each 10 g

Left: Parmesan Cheese
Right: Blue Cheese



RGC18TD

Sample

Sampling (HS)

Leave the sample with a piece of MonoTrap RGC18TD for 1 hour at 60 °C

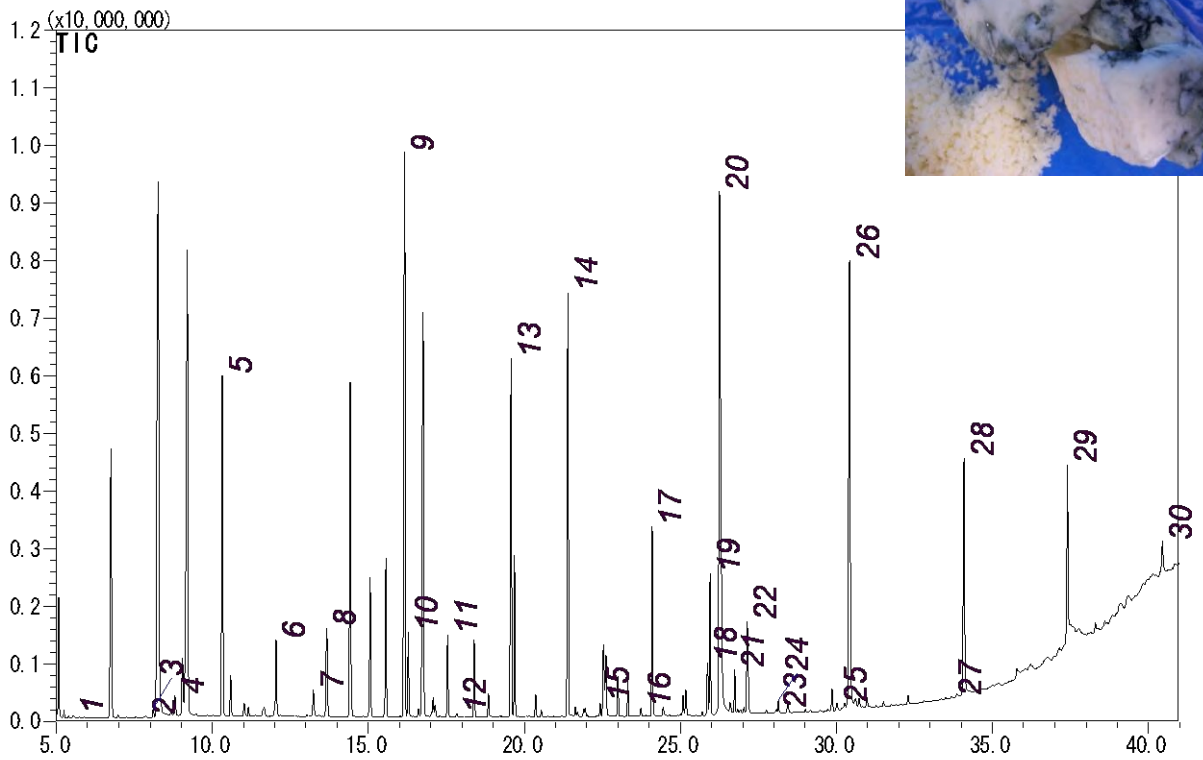
Thermal Desorption

Insert MonoTrap RGC18 was into the glass tube after sampling

Inserted to T-Dex II

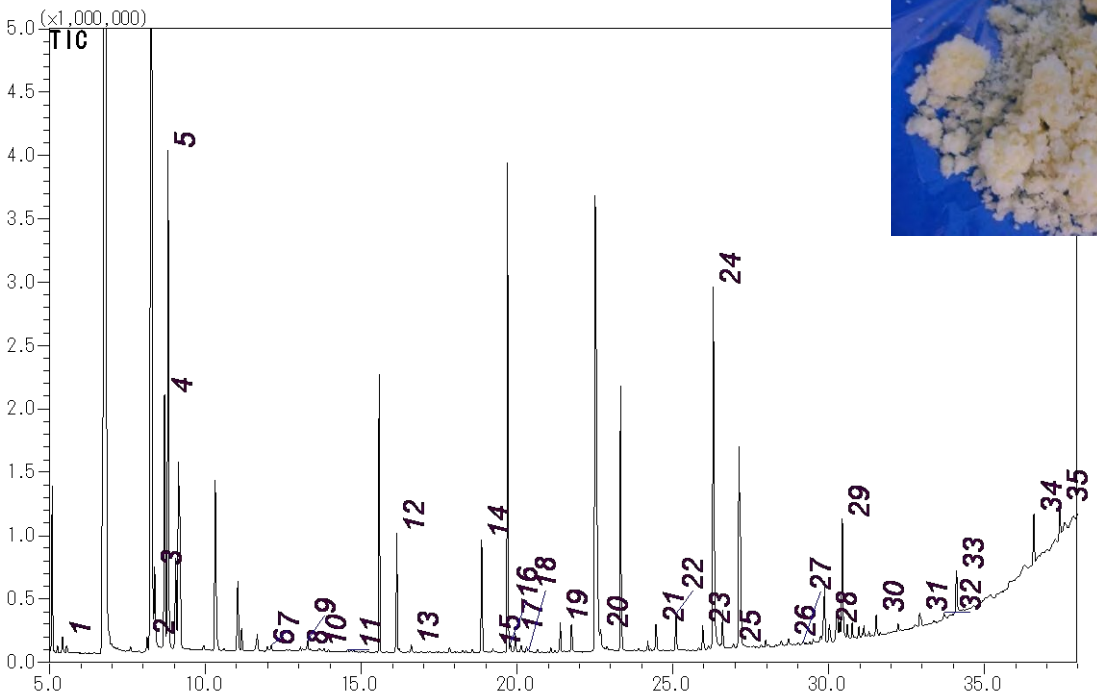
GC/MS

Flavor components of *Blue Cheese*



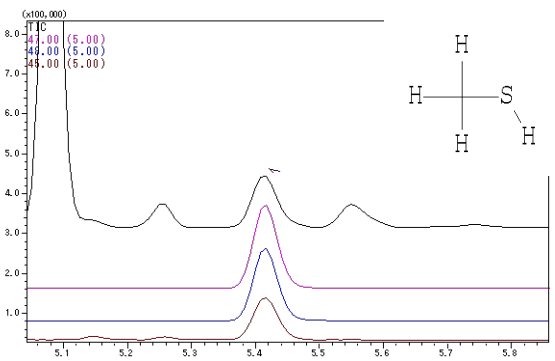
1	Acetaldehyde
2	Butanal
3	Ethyl Acetate
4	Isovaleraldehyde
5	2-Pentanone
6	Ethyl butyrate
7	2-Hexanone
8	Isobutyl alcohol
9	2-Heptanone
10	Hexanoic acid, methyl ester
11	Hexanoic acid, ethyl ester
12	1-Pentanol
13	2-Heptanol
14	2-Nonanone
15	Octanoic acid, ethyl ester
16	2-Decanone
17	2-Nonanol
18	Decanoic acid, methyl ester
19	2-Undecanone
20	Butanoic acid
21	Decanoic acid, ethyl ester
22	Butanoic acid, 3-methyl-
23	γ-Caprolactone
24	2-Undecanol
25	2-Tridecanone
26	Hexanoic acid
27	2-Pentadecanone
28	Octanoic Acid
29	*n*-Decanoic acid
30	Dodecanoic acid

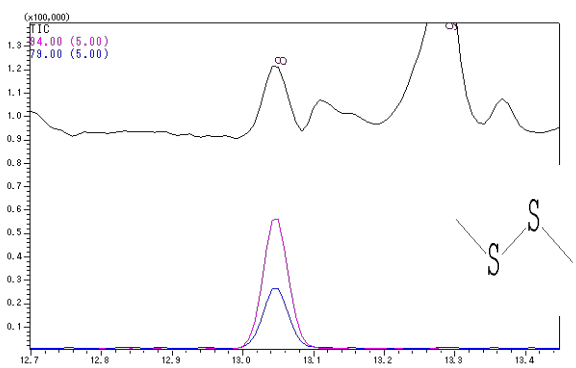
・Compound are identified with spectral libraries.

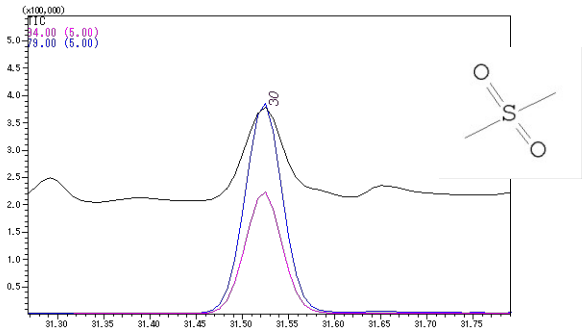


1	Methanethiol	13	D-Limonene	25	2-Furanmethanol
2	Ethyl Acetate	14	Acetoin	26	Acetamide
3	2-Butanone	15	Acetol	27	2-Tetradecanol
4	2-methylbutanal	16	Dimethylpyrazine	28	2-Tridecanone
5	3-methylbutanal	17	Dimethylpyrazine	29	Hexanoic acid
6	1-Propanol	18	Dimethylpyrazine	30	Dimethyl sulfone
7	Toluene	19	2-Nonanone	31	delta-Octalactone
8	Dimethyl disulfide	20	2,5-Dimethyl-3-ethylpyrazine	32	2-Pentadecanone
9	Hexanal	21	Benzaldehyde	33	Octanoic Acid
10	2-Pentenal	22	Isobutyric acid	34	delta-Decalactone
11	3-Penten-2-one	23	2-Undecanone	35	n-Decanoic acid
12	2-Heptanone	24	Butanoic acid		

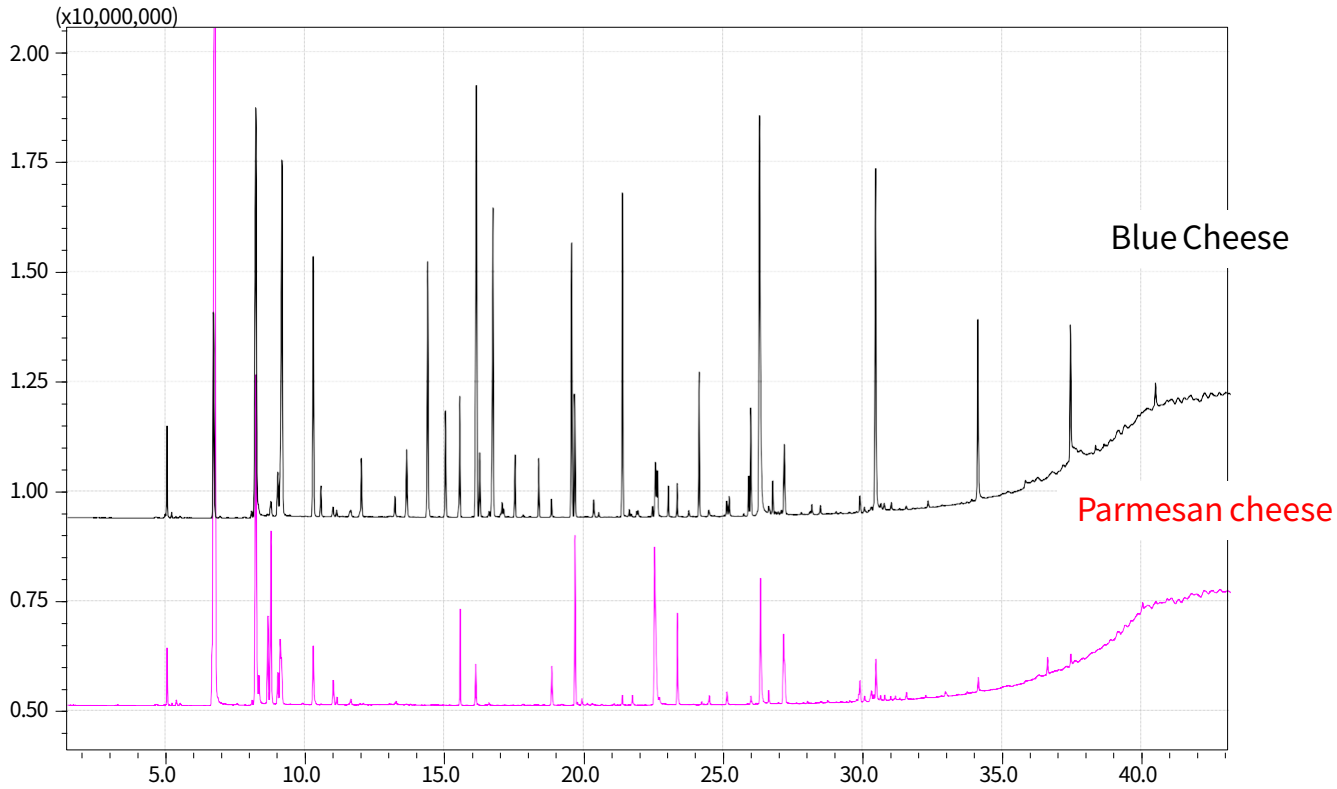
- Compound are identified with spectral libraries.







Comparison of chromatograms



Area % of flavor components from each cheese

Components	Blue Cheese	Parmesan Cheese
Acids	17.7	3.73
Aldehyds	0.29	4.33
Pyrazineds	n.d.	0.24
S compounds	n.d.	0.24

Thermal Desorption

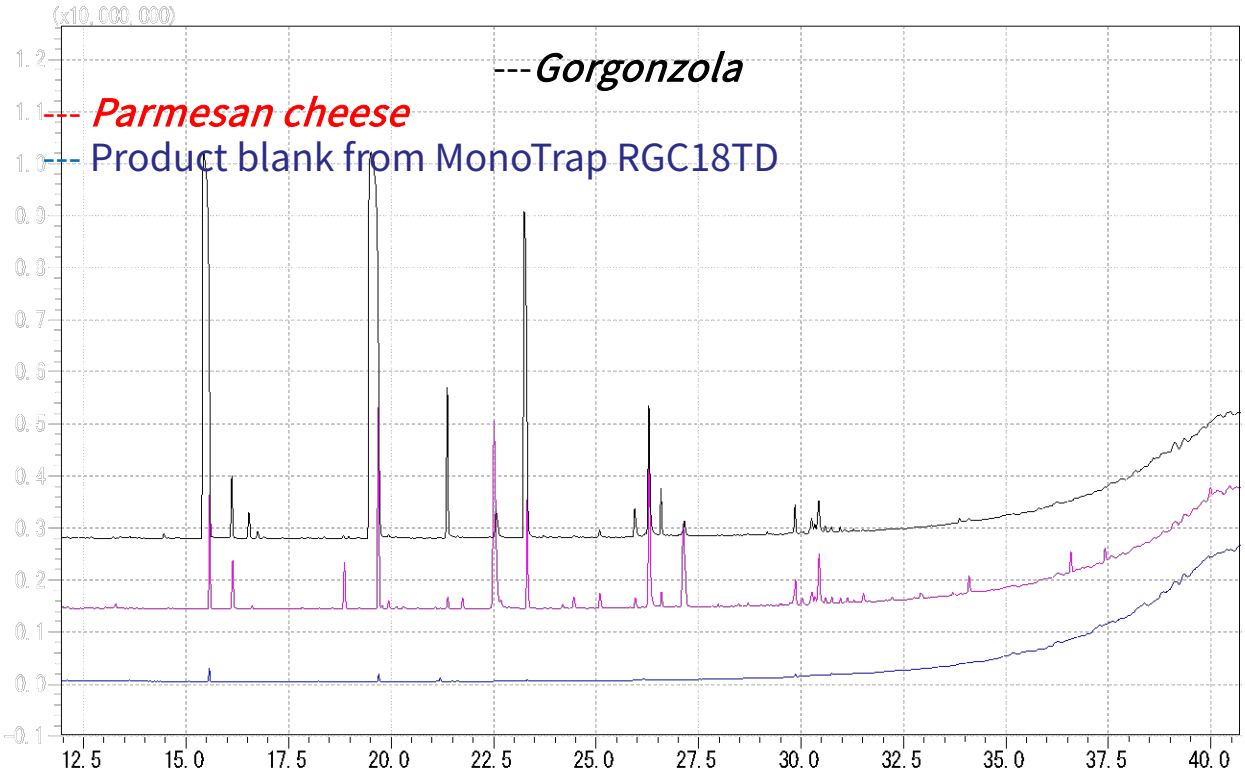
System : T-DEX 2
Desorb : Temp;200 °C
: Time;5 min
Cryo : -150deg
Split : 1:0 (Desorb;1, Split;0 cc/min)
Injection : 250 °C
Column Flow : He, 1 mL/min

GC/MS Conditions

System : SHIMADZU GC-2010 、 GCMS-QP2010Plus
Column : InertCap Pure-WAX
0.25mmI.D.×60m df=0.25µm
Column Temperature : 40°C (5 min)→6 °C/min→250 °C
Detection : MS Scan (*m/z*28.5-600)

Conditioned ready-to-use MonoTrap for TD will be delivered to you. You only have to open the ampoule bottle before sampling.

Product Blank Data:



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